

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:
Johannes A. Reinders
Serial No. 10/575,761
Confirmation No. 3906
Filed: May 08, 2007
Title: Heat Exchange Laminate

Group Art Unit: 1776
Examiner: Charles S Bushey
Atty. Dkt. No.: **05589.0003.USP0**

RESPONSE TO NON-FINAL OFFICE ACTION

Commissioner for Patents
PO Box 1450
Alexandria, VA 22313-1450

Sir:

In response to the Office Action dated 17 March 2011, please consider the following amendments and remarks.

AMENDMENTS TO THE CLAIMS

A complete listing of all claims as pending in the application with requested amendments is provided below.

1. (Previously presented) A dew-point cooler comprising a heat exchange element, the dew-point cooler being adapted to be operable in counter flow so that when in use a product air stream flows over a first side of the heat exchange element and is cooled by heat transfer to the element and a portion of the product air stream is diverted back over a second side of the heat exchange element, in use the second side of the heat exchange element being provided with a supply of water whereby heat transfer from the heat exchange element to the water causes it to evaporate into the air stream; wherein the heat exchange element comprises a heat conducting wall and a formed heat exchange laminate attached to the heat conducting wall, the formed heat exchange laminate comprising a formable carrier layer at least partially covered with a flexible liquid retaining layer having an open structure such that in use, a heat exchange medium can directly contact the carrier layer through the open structure of the liquid retaining layer.
2. (Previously presented) The dew-point cooler according to claim 1, wherein the liquid retaining layer is a fibrous material and the open structure comprises spaces between the fibres.
3. (Previously presented) The dew-point cooler according to claim 2, wherein the fibrous material is adhered to the carrier layer by an adhesive.
4. (Previously presented) The dew-point cooler according to claim 3, wherein the fibrous material comprises a bonded mixture of polyester and viscose fibres.
5. (Previously presented) The dew-point cooler according to claim 3, wherein the fibrous material comprises a woven or knitted fibrous layer.
6. (Previously presented) The dew-point cooler according to claim 1 wherein the carrier layer comprises aluminium.
7. (Previously presented) The dew-point cooler according to claim 1 wherein the liquid retaining layer has an average thickness of less than 50 microns.
8. (Cancelled)

9. (Previously presented) The dew-point cooler according to claim 1 , wherein the heat exchange laminate is corrugated to form a series of elongate fins.
 10. (Previously presented) The dew-point cooler according to claim 9 wherein the elongate fins are wave shaped in their elongate direction.
 11. (Previously presented) The dew-point cooler according to claim 9, wherein the fins are provided with louvres.
 12. (Previously presented) The dew-point cooler according to claim 1 , wherein the liquid retaining layer is provided substantially only on a first side of the carrier layer.
 13. (Cancelled)
 14. (Previously presented) The dew-point cooler according to claim 1 wherein the formed heat exchange laminate is attached to the heat conducting wall by adhesive.
 15. (Previously presented) The dew-point cooler according to claim 14 wherein the adhesive is a heat actuated adhesive applied to the carrier layer or the heat conducting wall.
 16. (Previously presented) The dew-point cooler according to claim 1 wherein the heat conducting wall is formed into a tubular structure.
 17. (Previously presented) The dew-point cooler according to claim 1, wherein the heat conducting wall also comprises a heat exchange laminate according to claim 1.
 18. (Cancelled)
 19. (Cancelled)
 20. (Cancelled)
21. (Withdrawn-currently amended)) A method of manufacturing ~~as the~~ dew-point cooler according to claim 1, comprising:
- providing a heat exchange laminate comprising a formable carrier layer at least partially covered with a flexible liquid retaining layer having an open structure;
- forming the laminate into a plurality of elongate fins; and

attaching the fins to a heat conducting wall for heat transfer thereto to form a heat exchange element.

22. (Cancelled)
23. (Withdrawn) The method according to claim 21 further comprising forming louvres in the fins.
24. (Withdrawn) The method according to claim 22 further comprising attaching the fins to a first surface of a membrane for heat transfer thereto.
25. (Withdrawn) The method according to claim 24 further comprising attaching further fins to a second surface of the membrane for heat transfer thereto.
26. (Withdrawn) The method according to claim 25 further comprising folding the membrane to form a tubular structure with the elongate fins on an exterior surface of the tubular structure and the further fins on an internal surface of the tubular structure.
27. (Previously presented) The dew-point cooler according to claim 10 wherein the liquid retaining layer is provided substantially only on a first side of the carrier layer.
28. (Previously presented) A dew-point cooler comprising a heat exchange element, the dew-point cooler being adapted to be operable in counter flow so that in use air flows over a first side of the heat exchange element and is cooled by heat transfer to the element and air flows over the second side of the element, in use the second side of the heat exchange element being provided with a supply of water whereby heat transfer from the heat exchange element to the water causes it to evaporate into the air stream; wherein the heat exchange element comprises a formed heat exchange laminate having a formable carrier layer at least partially covered with a flexible liquid retaining layer having an open structure such that in use, a heat exchange medium can directly contact the carrier layer through the open structure of the liquid retaining layer.
29. (Previously presented) A dew point cooler comprising a heat exchange element; the heat exchange element comprising
 - i) a first side forming a flowpath for an airstream;

- ii) a second side forming an flowpath for an airstream; and
- iii) a heat exchange laminate comprising a formable carrier layer at least partially covered with a flexible liquid retaining layer having an open structure such that in use, a heat exchange medium can directly contact the carrier layer through the open structure of the liquid retaining layer.

REMARKS

This paper is filed in response to the Non-Final Office Action dated 17 March 2011. Claims 1-7, 9-12, 14-17, and 27-29 were pending in this application. Claims 21, and 23-26 are withdrawn. Rejoinder of withdrawn claims upon allowance is respectfully requested.

Claim Amendments

Withdrawn claim 21 has been amended to be dependent on claim 1.

Allowable Subject Matter

Applicants acknowledge and thank the Examiner for the indication of allowable subject matter of all pending claims 1-7, 9-12, 14-17 and 27-29. Applicants believe the instant application is now in condition for allowance.

Further, Applicants respectfully request rejoinder of withdrawn claims 21 and 23-26 as amended.

Request for telephonic interview

Should the Examiner wish to discuss any of or any potential formalities prior to allowance, the Examiner is respectfully requested to contact the undersigned by telephone at the number given below or by email to haitjemac@hoyngmonegier.com in order to schedule a telephone interview.

Extension of Time

Any extension of time that may be deemed necessary to further the prosecution of this application is hereby requested.

Authorization to Charge Fees

The Commissioner is authorized to charge any additional fees which may be required, or credit any overpayment, to Deposit Account No. 50-5380, referencing the docket number shown above.

Authorization to Communicate via email

Pursuant to MPEP 502.03, authorization is hereby given to the USPTO to communicate with Applicant's representative concerning any subject matter of this application by electronic mail. I understand that a copy of these communications will be made of record in the application file. Applicant's representative, Coraline J. Haitjema, can be reached at email address haitjemac@hoyngmonegier.com.

The Examiner may also contact the undersigned by telephone at the number given below in order to resolve any questions.

Respectfully submitted,

/cjhaitjema/

Coraline J. Haitjema
Reg. No. 63,192

Date: 16 September 2011

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